

TULOSTOMA BRUMALE PERS.
A NEW RECORD FOR NEW ENGLAND

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In April 1963, we were collecting on Good Harbor Beach, Gloucester, Essex County, Massachusetts. Mr. Arnold Kenniston of Norton drew our attention to an unusual Basidiomycete. Later, we tentatively identified the plant as *Tulostoma brumale* Persoon of the Series Gasteromycetes in the order Sclerodermatales. This is a stalked puffball which produces its fruiting body in the fall as a small sclerotial swelling some two to three centimeters under the surface of the ground (Gaumann and Dodge, 1928). On maturation, it emerges on a slender stipe and sheds its exoperidium, exposing an endoperidium which opens by an apical mouth.

Good Harbor Beach is a public bathing area. Back of the broad, sandy storm beach is a series of low dunes which extend for about 350 yards to a public highway. This broad area of fine sand is a rarity on rocky Cape Ann.

In 1963, thirty-five specimens of *Tulostoma* were collected from the north end of the beach ninety to one-hundred feet inland from the fore-dune. In 1964, thirty-three additional individuals were taken, nine from the previous station and twenty-four from a location sixty to seventy-five feet south of the 1963 site and about seventy-five feet from the fore-dune. The vascular plants associated with *Tulostoma* were as follows: *Agropyron repens* (L.) Beauv. (common), *Ammophila breviligulata* Fernald (fairly common), *Lathyrus japonicus* Willd. var. *glaber* (Sev.) Fernald (fairly common), *Limonium Nashii* Small (rather rare), *Solidago sempervirens* L. (rather rare), *Sedum* sp. (only a few plants), and *Taraxacum officinale* Weber (only a few). Specimens are on deposit at the Herbarium of the University of New Hampshire.

Our collection in Gloucester constitutes a new record for both the genus *Tulostoma* and the family *Tulostomataceae* in New England. The nearest station to our material for

the genus is one reported by White (1901) in Ithaca, New York.

The identification of this organism as *Tulostoma brumale* Persoon 1801 posed a considerable problem. We visited the Farlow Herbarium and the Herbarium of the New York Botanical Garden and examined their collections of *Tulostoma*.¹

We feel from our investigation that many uncertainties exist in the taxonomy of the genus. At present, no studies are available showing possible variation within a single large population. If such studies were systematically made for the genus, it might be possible to reduce to synonymy many existing species. Cunningham (1942) supports this conclusion when he states that of the eighty-five described species of *Tulostoma*, "not more than about thirty are valid." Our present collection is of a size to warrant making a statistical examination of *Tulostoma brumale*.

Coker and Couch (1928) noted that *Tulostoma simulans* Lloyd was found at the same station for nineteen years. This indicates a perennial tendency in at least some species of the genus. Our material from Cape Ann appears to be perennial since it has persisted in the same locality for two years. If our organism can be collected annually, it is our hope to find eventually young specimens in the hypogenous stage and perhaps to verify Schroeter's figures of the basidia and the method of spore production.

There is confusion in the taxonomic history of the genus *Tulostoma* and of the species *T. brumale*. Persoon established *T. brumale* in 1801 (*Synopsis methodica fungorum*, p. 139). Synonyms for Persoon's species are. *T. imbricatum* Pers. 1794 (*N. Mag. Bot. (Rom.)* 1:86); *T. squamosum* Pers. 1801 (*Syn. meth. fung.*, p. 139); *T. mammosum* Fr. 1829 (*Syst.* 3:42); and *T. pedunculatum* (L.) Schroet. 1876 (*Beitr. Biol. Pflanz. (Cohn)* 2:65). There has also been confusion concerning the spelling of

¹The authors are very grateful to Dr. Clark T. Rogerson, Curator of Cryptogamic Botany of the New York Botanical Garden, for the time and attention given to us during the two days spent at the herbarium.

the generic name. Persoon established the genus in 1801 and spelled it *Tulostoma*. Sprengel in 1827 (*Systema Vegetabilium* 4(1): 524) followed by Fries in 1849 (*Summa Vegetabilium Scandinaviae* 440), Saccardo in 1888 (*Syl. fung.* vol. 7) and Long in 1946 (*Mycologia* 38:77), among others, questioned the etymology of the word and pointed out that the Greek upsilon should be transcribed by the Latin "y", thus spelling the genus *Tylostoma*. We consulted Dr. Donald P. Rogers² of the University of Illinois on this matter, and he pointed out that there was "no law on the point and the practice was not invariable." He stated that such names as "*Tulocarpus*, *Tulodiscus* and *Buxus* or *Mucor*" were equally vulnerable to the same type of logic. Thus, no "inadvertance or error on the part of the author" can be claimed. With this support, we advise the retention of Persoon's spelling of *Tulostoma*.

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²We wish to thank Dr. Rogers for his aid with synonymy of the species and spelling of the generic name.